AMENDMENT

1. (original) A method of implementing a network of devices connected to a shared media, the devices being a part of a consumer electronic appliance, the method comprising:

forming a logical network on the shared media, the logical network including an address space arbiter (ASA) coupled to the shared media, the logical network having a logical network ID; and

adding a device to the logical network, the device being coupled to the shared media and configured to send and receive messages over the shared media, the device being responsive to messages sent over the shared media that are addressed to the logical network.

2. (original) The method of Claim 1 further comprising maintaining the logical network, wherein maintaining the logical network includes detecting and removing inactive devices from the logical network.

3. (original) The method of Claim 1 wherein adding a device comprises:

discovering the device coupled to the shared medium by communication between the ASA and the device; and

acquiring the discovered device by operation of an acquisition authority (AA), the acquired device being a member of the logical network.

4. (original) The method of Claim 1 further comprising adding a plurality of devices to the logical network, the plurality of devices being coupled to the shared media and configured to send and receive messages over the shared media, the plurality of devices being responsive to messages sent over the shared media that are addressed to the logical network.

5. (original) The method of Claim 1 further comprising forming a second logical network on the shared media by operation of a second ASA, members of the second logical network being configured to respond to messages carried on the shared media addressed

to the second logical network and not to respond to messages carried on the shared media that are addressed to the logical network.

6. (original) The method of Claim 1 wherein the shared media comprises a power-line of a building.

7. (original) The method of Claim 1 wherein forming a logical network comprises:

selecting an ID number by operation of the ASA;

broadcasting a message addressed to a logical network having the selected ID number as its logical network ID;

monitoring the shared media for a response to the broadcasted message; and

adopting the selected ID number as the logical network ID for the logical network.

8. (original) The method of Claim 1 wherein discovering a device comprises:

receiving a message from the device in the ASA; and

determining whether the device is unacquired.

9. (original) The method of Claim 3 further comprising:

maintaining an acquired device table, wherein the acquired device table includes information of devices that are members of the logical network;

maintaining an announced device table, wherein the announced device table includes information of discovered but unacquired devices.

10. (original) The method of Claim 9 wherein acquiring a device further comprises:

assigning a logical device identifier to the device;

assigning the logical network ID as a logical network identifier to the device;

adding the device's logical device identifier and globally unique identifier to acquired device table; and

removing the device's logical device identifier and globally unique identifier from the announced device table.

11. (original) The method of Claim 10 wherein discovering a device further comprises:

receiving a message from the device over the shared media, the message including a globally unique identifier, a logical network identifier, and a logical device identifier;

comparing the device's globally unique identifier, logical network identifier, and logical device identifier to those of devices that are members of the logical network, the globally unique identifier, logical network identifier and logical device identifier of devices that are members of the logical network being stored in the acquired device table; and

adding the device's globally unique identifier, logical network identifier, and logical device identifier to the announced device table if the device's globally unique identifier is not stored in the acquired device table and the device's logical network identifier and logical device identifier indicate that the device is unacquired.

12. (original) The method of Claim 11 further comprising assigning the logical network ID as the device's logical network identifier if the device's globally unique identifier is stored in the acquired device table but the device's logical network identifier and logical device identifier indicate that the device is unacquired.

13. (original) The method of Claim 11 further comprising leaving the device's logical network identifier and logical device identifier unchanged if the device's globally unique identifier, logical network identifier and logical device identifier match those stored in the acquired device table for an acquired device.

14. (original) The method of Claim 11 further comprising configuring the device into an unacquired state if the device's logical network identifier matches the logical network ID but either the device's logical network identifier or the device's globally unique identifier do not match those stored in the acquired device table for an acquired device.

15. (original) The method of Claim 11 further comprising obtaining a new logical network ID if the device's logical network identifier matches the logical network ID but the device's logical device identifier indicates that the device is an ASA.

16. (original) The method of Claim 1 wherein the device is implemented as a process of an executing computer program.

17. (original) The method of Claim 2 wherein maintaining the logical network comprises:

comparing elapsed time since the device last transmitted a message over the shared media to a predetermined maximum inactive time limit; and

removing the device from the logical network if the elapsed time exceeds the maximum inactive time limit.

18. (original) The method of Claim 17 further comprising:

before removing the device from the logical network, sending a message to the device and monitoring the shared media for a valid message from the device that is responsive to the message; and

resetting the elapsed time if the device provides a valid responsive message within a predetermined time period.

19. (original) The method of Claim 17 wherein the device is configurable to set the maximum inactive time limit by sending a message to the ASA that includes a value for the maximum inactive time limit.

20. (original) The method of Claim 17 wherein the ASA includes a table that configured to store the elapsed time and the maximum inactive time period.

21. (original) A method of communication between devices on a shared media, the shared media being configurable to support communication within one or more logical networks, each logical network having a logical network ID and each device having a globally

unique identifier, a logical network identifier, and a logical device identifier, the method comprising:

coupling a sending device and a receiving device on the shared media;

formatting a message for transmission on the shared media from the sending device to the receiving device, wherein the message includes:

a source logical network ID field configurable to contain the logical network ID of the logical network of which the sending device is a member;

a source device ID field configurable to contain the logical device identifier,

a destination logical network ID field configurable to contain the logical network ID of which the receiving device is a member,

a destination device ID field configurable to contain the logical device ID of the receiving device,

a message type field configurable to contain a code indicative of information contained in the message, and

a message data field configurable to contain data; and

transmitting the message from the device over the shared media.

22. (original) The method of Claim 21 wherein the destination logical network ID field is configurable to contain a code representing all logical networks on the shared media.

23. (original) The method of Claim 21 wherein the destination device ID field is configurable to contain a code representing all devices of the logical network indicated in the destination logical network ID field.

24. (original) The method of Claim 21 wherein the source device ID field is configurable to contain a code representing that the sending device has no logical device ID.

25. (original) The method of Claim 21 wherein the source logical network ID field is configurable to contain a code representing that the sending device is not a member of a logical network.

26. (currently amended) A system for supporting communication between devices connected to a shared media, the devices being a part of a consumer electronic appliance, the system comprising:

a device coupled to the shared media, wherein the device is configured to send and receive messages over the shared media;

an address space arbiter (ASA) coupled to the shared media, the ASA being configurable to form a logical network with zero or more devices connected to the shared media; and

an acquisition ~~arbitration~~ authority (AA) at least intermittently coupled to the ASA, wherein the AA is configured to the selectively authorize the ASA to add a device to the logical network,

wherein the logical network has a logical network ID, the ASA and any devices of the logical network are configured to be responsive to messages sent over the shared media that are addressed to the logical network.

27. (original) The system of Claim 26 wherein the ASA is configured to detect and remove inactive devices from the logical network.

28. (original) The system of Claim 26 wherein the device is implemented as a process of an executing computer program.

29. (original) The system of Claim 26 further comprising a second ASA and a second set of zero or more devices coupled to the shared media, the second ASA and the second group of devices forming a second logical network on the shared media, members of the second logical network being configured to respond to messages carried on the shared media addressed to the second logical network and not respond to messages carried on the shared media that are addressed to the logical network.

30. (original) The system of Claim 26 wherein the shared media comprises a power-line of a building.

31. (original) The system of Claim 26 wherein the ASA includes a control unit.

32. (original) The system of Claim 31 wherein the control unit is implemented with a computer system.

33. (original) The system of Claim 31 wherein the control unit of the ASA is configured to form a logical network by:

selecting an ID number;

broadcasting a message addressed to a logical network having the selected ID number as its logical network ID;

monitoring the shared media for a response to the broadcasted message; and

adopting the selected ID number as the logical network ID for the logical network.

34. (original) The system of Claim 31 wherein the control unit of the ASA is configured to discover a device on the shared media by:

receiving a message from the device; and

determining whether the device is unacquired.

35. (original) The system of Claim 31 wherein the control unit of the ASA further comprises:

an acquired device table, wherein the acquired device table includes information of devices that are members of the logical network; and

an announced device table, wherein the announced device table includes information of discovered but unacquired devices.

36. (original) The system of Claim 35 wherein the control unit of the ASA is configured to acquire a device by:

receiving authorization to acquire the device from the AA;

assigning a logical device identifier to the device;

assigning the logical network ID as a logical network identifier to the device;

adding the device's logical device identifier and globally unique identifier to acquired device table; and

removing the device's logical device identifier and globally unique identifier from the announced device table.

37. (original) The system of Claim 27 wherein the control unit of the ASA is configured to detect an inactive device by:

comparing an elapsed time since the device last transmitted a message over the shared media to a predetermined maximum inactive time limit;

sending a message to the device and monitoring the shared media for a valid message from the device that is responsive to the message; and

resetting the elapsed time if the device transmits a valid responsive message over the shared media within a predetermined time period.

38. (original) The system of Claim 37 the device is configurable to set the maximum inactive time limit by sending a message to the ASA that includes a value for the maximum inactive time limit.

39. (original) A computer-readable medium having computer-executable instructions for performing steps comprising:

forming a logical network on the shared media, the logical network including an address space arbiter (ASA) coupled to the shared media, the logical network having a logical network ID;

adding a device to the logical network, the device being coupled to the shared media and configured to send and receive messages over the shared media, the device being responsive to messages sent over the shared media that are addressed to the logical network; and

maintaining the logical network, wherein maintaining the logical network includes detecting and removing inactive devices from the logical network.

40. (original) The computer-readable medium of Claim 39, wherein adding a device comprises computer-executable instructions for performing the steps of:

discovering the device coupled to the shared medium by communication between the ASA and the device; and

acquiring the discovered device by operation of an acquisition authority (AA), the acquired device being a member of the logical network.

41. (original) The computer-readable medium of Claim 39, wherein forming a logical network comprises computer-executable instructions for performing the steps of:

selecting an ID number by operation of the ASA;

broadcasting a message addressed to a logical network having the selected ID number as its logical network ID;

monitoring the shared media for a response to the broadcasted message; and

adopting the selected ID number as the logical network ID for the logical network.

42. (original) The computer-readable medium of Claim 39, wherein discovering a device comprises computer-executable instructions for performing the steps of:

receiving a message from the device in the ASA; and

determining whether the device is unacquired.

43. (original) The computer-readable medium of Claim 39 having further computer-executable instructions for performing steps comprising:

maintaining an acquired device table, wherein the acquired device table includes information of devices that are members of the logical network;

maintaining an announced device table, wherein the announced device table includes information of discovered but unacquired devices.

44. (original) The computer-readable medium of Claim 43, wherein acquiring a device further comprises computer-executable instructions for performing the steps of:

assigning a logical device identifier to the device;

assigning the logical network ID as a logical network identifier to the device;

adding the device's logical device identifier and globally unique identifier to acquired device table; and

removing the device's logical device identifier and globally unique identifier from the announced device table.

45. (original) The computer-readable medium of Claim 43 wherein discovering a device further comprises computer-executable instructions for performing the steps of:

receiving a message from the device over the shared media, the message including a globally unique identifier, a logical network identifier, and a logical device identifier;

comparing the device's globally unique identifier, logical network identifier, and logical device identifier to those of devices that are members of the logical network, the globally unique identifier, logical network identifier and logical device identifier of devices that are members of the logical network being stored in the acquired device table; and

adding the device's globally unique identifier, logical network identifier, and logical device identifier to the announced device table if the device's globally unique identifier is not stored in the acquired device table and the device's logical network identifier and logical device identifier indicate that the device is unacquired.

46. (original) A system for implementing a network of devices connected to a shared media, the devices being part of a consumer electronic appliance, the system comprising:

means for forming a logical network on the shared media, the logical network having a logical network ID;

means for adding a device to the logical network, the device being coupled to the shared media and configured to send and receive messages over the shared media, the device being responsive to messages sent over the shared media that are addressed to the logical network; and

means for detecting and removing inactive devices from the logical network.

47. (original) The system of Claim 46 wherein the means for adding a device comprises:

means for discovering the device coupled to the shared medium; and

means for acquiring the discovered device, the acquired device being a member of the logical network.